ABSTRACT OF THE DISCLOSURE

A messaging scheme to synchronize processes within a distributed memory multiprocessing computer system having two or more processing nodes

5   interconnected using an interconnect structure of dual-unidirectional links. Each unidirectional link forms a point-to-point interconnect to transfer packetized information between two processing nodes. A lock acquisition request from a lock requesting node is placed into service by an arbitrating node when no previous lock requests are pending for service. The arbitrating node transmits a broadcast message

10   to all nodes in the system, which, in turn, respond with a corresponding probe response message to inform the arbitrating node of cessation of issuance of new requests by the node sending the probe response message. The arbitrating node informs the lock requesting node of the requesting node's lock ownership by transmitting a target done message thereto. After completion of lock operations, the

15   lock requesting node sends a lock release request to the arbitrating node, which, in turn, informs all processing nodes of lock release by transmitting another broadcast message within the system. The messaging protocol is completed when each node sends another probe response to the arbitrating node, which, in turn, sends a final target done message to the lock requesting node. Lock operations are performed

20   without contention for system resources and without deadlocks among various processing nodes.